Appl. No. 10/627,507
Amdt. sent August 31, 2005
Preliminary Amendment

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Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1   1.   (Original): A method for accessing data contained in a data store
2   comprising:
3   detecting a user-request to perform an operation on an object stored in a data store
4   and in response thereto communicating a request to the data store to perform the operation and
5   communicating a marker request to the data store, the marker request including information
6   indicative of the operation and the object, wherein the marker request produces a marker journal
7   entry;
8   detecting a user-request to retrieve a specified marker journal entry and in
9   response thereto communicating a request to the data store to retrieve the specified marker
10   journal entry; and
11   detecting a user-request to perform a recovery operation and in response thereto
12   communicating a recovery request to the data store to restore a data state of the data store, the
13   user-request including information including a target time of the data state, the target time being
14   based on a time associated with a previously retrieved marker journal entry.

1   2.   (Original): The method of claim 1 wherein the user-request to retrieve a
2   specified marker journal entry includes information indicating at least one of a target time, an
3   operation, and an object name.

1   3.   (Original): The method of claim 1 further comprising obtaining the
2   previously retrieved marker journal entry based on one of an operation on an object and an object
3   name.

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1   4.   (Original): The method of claim 1 further comprising retrieving a
2   plurality of marker journal entries and presenting one or more of the marker journal entries to a
3   user, wherein the previously retrieved marker journal entry is a user selected one of the marker
4   journal entries.

1   5.   (Original): The method of claim 1 wherein the marker journal entries are
2   retrieved periodically over a span of time.

1   6.   (Original): A method for processing data on a data store comprising:
2   receiving user-requests for operations to be performed on a data store;
3   for each user-request, communicating one or more requests to the data store to
4   perform the user-request;
5   monitoring the user-requests; and
6   if a user-request is a predetermined operation, then communicating a marker
7   journal request to the data store in addition to communicating the one or more requests, thereby
8   creating a marker journal entry to mark a time of occurrence of the predetermined operation,
9   wherein the marker journal request includes information representative of the
10   predetermined operation,
11   wherein communicating a marker journal request includes invoking first
12   application program interface (API) program code to transmit the marker journal request to the
13   data store.

1   7.   (Original): The method of claim 6 further comprising receiving a user-
2   request to retrieve a marker journal entry and in response thereto communicating a marker
3   retrieval request to the data store, wherein the marker retrieval request includes one or more
4   retrieval criteria, wherein the communicating includes invoking second API program code to
5   transmit the marker retrieval request to the data store.

1   8.   (Original): The method of claim 7 further comprising receiving a
2   retrieved marker journal entry from the data store and storing the retrieved marker journal entry,
3   wherein the retrieved marker journal entry satisfies the one or more retrieval criteria.

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1   9.   (Original): The method of claim 8 further comprising communicating

2 additional marker retrieval requests to the data store and storing additional retrieved marker

3 journal entries.

1   10.   (Original): The method of claim 6 further comprising receiving user-

2 information indicative of one of more predetermined operations to be monitored.

1   11.   (Currently amended): A ~~M~~method for processing data contained in a data

2 store comprising:

3   receiving user-requests for operations to be performed on a data store;

4   for each user-request, communicating one or more associated requests to the data

5 store to perform the user-request;

6   for at least some of the user-requests, communicating a marker journal request to

7 the data store in addition to communicating the one or more associated requests, thereby creating

8 one or more marker journal entries to mark a time of occurrence of some of the user-requests;

9   retrieving one or more first marker journal entries from the data store, based on

10 one or more retrieval criteria;

11   displaying the first marker journal entries;

12   receiving a user-selected one of the first marker journal entries; and

13   performing a recovery operation based on a target time associated with the user-

14 selected one of the first marker journal entries.

1   12.   (Original): The method of claim 11 wherein communicating a marker

2 journal request includes invoking first API program code to communicate with the data store.

1   13.   (Original): The method of claim 12 wherein retrieving one or more first

2 marker journal entries includes performing one or more invocations of second API program code

3 to communicate with the data store.

1   14.   (Original): The method of claim 13 wherein performing a recovery

2 operation includes performing one or more invocations of third API program code to

3 communicate with the data store.

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1   15.   (Original): The method of claim 11 further comprising receiving user-

2   information representative of the at least some of the user-requests.

1   16.   (Original): The method of claim 15 wherein the user-information includes

2   one or more of an operation to be performed in the data store and an object contained in the data

3   store.

1   17.   (Currently amended): A method for processing data in a data store

2   comprising:

3   producing one or more snapshots of a data store;

4   detecting write requests directed to the data store and in response thereto

5   producing journal entries corresponding to the write requests, wherein the journal entries can be

6   applied to one of the snapshots to recreate one or more data states of the data store;

7   detecting a̶ marker request<u>s</u> and in response thereto producing a̶ <u>corresponding</u>

8   marker journal entr<u>ies</u>y̶, wherein the journal entries and the marker journal entries are ordered

9   according to the time of their respective write requests and marker requests;

10   detecting a request to retrieve a specified marker journal entry and in response

11   thereto accessing the specified marker journal entry; and

12   detecting a request to perform a recovery operation, the request including a target

13   time based on a time associated with a previously retrieved marker journal entry.

1   18.   (Original): The method of claim 17 further comprising assigning a

2   sequence number to each journal entry and to the marker journal entry in the order in which the

3   entries are produced.

1   19.   (Original): The method of claim 17 wherein the marker request is

2   detected as part of performing a predetermined operation on an object stored on the data store.

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1   20.   (Currently amended): Computer apparatus for processing data contained

2   in a data store comprising:

3   a data processing component;

4   a communication component configured to communicate between a host device

5   and a data store; and

6   computer program code configured to operate one or more of the data processing

7   component ~~and~~ or the communication component to perform steps of:

8   communicating marker journal requests to the data store, to create a

9   plurality of marker journals;

10   communicating marker retrieval requests to the data store, to retrieve one

11   or more of the marker journal entries; and

12   communicating a data recovery request to the data store, to perform a

13   recovery operation to recover a data state in the data store;

14   wherein the computer program code is configured as an application

15   programming interface (API) to allow an application program to perform one or more of

16   the steps of communicating.

1   21.   (Original): The computer apparatus of claim 20 wherein each marker

2   journal request includes information indicative of one of an object contained in the data store and

3   an operation to be performed on an object contained in the data store.

1   22.   (Original): The computer apparatus of claim 20 wherein the marker

2   retrieval requests are based on information associated with the marker journal entries.

1   23.   (Original): The computer apparatus of claim 20 wherein the data recovery

2   request includes a target time indicative of the data state to be recovered.

1   24.   (Original): The computer apparatus of claim 23 wherein the target time is

2   based on a time associated with a previously retrieved marker journal entry.

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1   25.   (Currently amended): A computer program product for processing data on

2   a data store comprising:

3   a storage component having stored therein computer program code,

4   the computer program code comprising an application program interface (API),

5   the API comprising:

6   a first API component configured to allow execution of first program

7   code, the first program code configured <u>to operate a data processor</u> to communicate a

8   maker journal request to a data store to create a marker journal entry, the marker journal

9   request including marker information indicative of one or more of an object contained in

10   the data store <s>and</s> <u>or</u> an operation on an object contained in the data store, the marker

11   information being associated with the marker journal entry;

12   a second API component configured to allow execution of second program

13   code, the second program code configured <u>to operate a data processor</u> to communicate a

14   marker retrieval request to the data store to retrieve at least one marker journal entry, the

15   marker retrieval request including retrieval criteria based on the marker information; and

16   a third API component configured <u>to operate a data processor</u> to allow

17   execution of third program code, the third program code configured to communicate a

18   recovery request to the data store to recover a data state of the data store.

1   26.   (Original): The computer program product of claim 25 wherein the

2   recovery request includes a target time that is based on a time associated with a previously

3   retrieved marker journal entry.

1   27.   (Currently amended): The computer program product of claim 25 wherein

2   the API further comprises a fourth API component configured <u>to operate a data processor</u> to

3   allow execution of fourth program code, the fourth program code configured to monitor one or

4   more operations on one or more objects contained in the data store.

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1   28.   (Currently amended): The computer program product of claim 27 wherein

2   the API further comprises a fifth API component configured <u>to operate a data processor</u> to allow

3   execution of fifth program code, the fifth program code configured to communicate a marker

4   retrieval request to the data store to retrieve a marker journal entry.

1   29.   (Currently amended): The computer program product of claim 28 wherein

2   the fifth program code is further configured <u>to operate a data processor</u> to communicate a

3   plurality of marker retrieval requests to retrieve a plurality of retrieved marker journal entries,

4   wherein the recovery request includes a target time that is based on a time associated with one of

5   the retrieved marker journal entries.

1   30.   (Currently amended): The computer program product of claim 27 wherein

2   the API further comprises:

3   a fifth API component configured <u>to operate a data processor</u> to allow execution

4   of fifth program code, the fifth program code configured to communicate a plurality of marker

5   retrieval requests to the data store to retrieve a plurality of marker journal entries; and

6   a sixth API component configured <u>to operate a data processor</u> to allow execution

7   of sixth program code, the sixth program code configured to display the plurality of marker

8   journal entries, wherein the recovery request includes a target time that is based on a time

9   associated with one of the retrieved marker journal entries.